NEW JAPANESE FUNGI

NOTES AND TRANSLATIONS—I

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This is the first of a series of papers prepared for the purpose of supplying prompt and full information regarding newly discovered Japanese fungi that have been described only in Japanese. Descriptions of new species of fungi, many of them of great economic importance, are appearing in many different publications in Japan, some of them difficult to obtain in the United States. New species which are published in Latin, English, or other European language will be merely cited if referred to at all. It is hoped that the information here presented will prove of interest and value to American and European mycologists and plant pathologists.

There are two lists of Japanese fungi published twelve and thirteen years ago, both including all species known from Japan at the time, one by Prof. J. Matsumura, Index plantarum japonicarum, Vol. 1. Cryptogamae (Fungi pp. 127–184) 8°, Tokyo Mar. 1904, giving an alphabetical list of species with synonomy, host plants and localities all in Latin; the other by Prof. M. Shirai, A List of Japanese Fungi hitherto known, 8°. Tokyo Nov. 1905, 156 pp., giving an alphabetical list of species with synonomy in Latin and the host plants in Japanese characters only. Localities are not given. The more important fungi causing plant diseases in Japan are treated by Prof. A. Ideta, Handbook of the Plant Diseases of Japan, 4 ed. 4°, Tokyo 1909–1911, 1104 pp. A 17-page index gives the Latin names of the fungi treated. Prof. Ideta is now writing a supplement bringing this work up to date.

VALSA (EUVALSA) PAULOWNIAE Miyabe and Hemmi, sp. nov. in Byôchû-gai Zasshi (Journal of Plant Protection) 3^9: 681–689. 1 pl. Sept., 1916. (Japanese.)

This fungus attacks the Paulownia tree first on the twigs and

then spreads over the branches, finally covering the entire tree down to the roots. The infection occurs in winter and early spring, mostly on the wounded or dead part of shoots, which gradually become rough, dry and brown, and finally crack with irregular elevated spots appearing on the surface—the stromata of the fungus. Loose mycelia from the stroma connect the tissues of the host and the fungus bodies. The pycnidia first appear on the stromata as depressed globular flasks, 1.5 × .6 mm., with colorless, obtuse, slightly curved pycnospores 2.85–8.75 × 0.88–1.75 μ on short, branched conidiophores. The perithecia, arranged at the bottom of stroma, 15–16 in one group, are flask-shaped with long necks about twice or three times the length of the perithecial body which measures 150–300 μ in diameter; asci very fragile, soon disappearing, cylindric or clavate, more or less curved, sessile or very short stalked, 32–52 × 8–10 μ octospored; ascospores generally in two rows, occasionally irregular or one row, cylindric, obtuse, curved, smooth, hyaline, very slightly pale brownish when mature, 10–18 × 2–4 μ, germinating in 20–24 hours, either in distilled water or on culture media.

This "Tachigare" or dieback disease first appeared in Hokkaidô about 1910 and seriously damaged Paulownia, first in 1913 and 1914 when many old trees were killed. In 1915 the disease spread all over Hokkaidô, and in one case about 3,000 trees at the same place were attacked.

For its prevention the trunks of the trees should be wrapped with straw in winter so as to prevent freezing or wounding. Bordeaux mixture should be used as a spray on the trees in early spring.

OPHIOCHAETA GRAMINIS (Sacc.) K. Hara n. comb. in Byôchûgai Zasshi (Journ. of Plant Protection) 3^5: 342–345. May, 1916. (Japanese.)

This fungus, commonly called *Ophiobolus graminis,* is known as a cause of foot-rot of wheat and barley in France, Belgium, Germany, and Japan. The author discovered a similar disease on rice-plant caused by the same fungus which he proposes to transfer to Saccardo's genus Ophiochaeta, on account of the existence of bristle hairs on the perithecium. In the case of the fungus attacking the rice-plants the perithecia are somewhat smaller, *i. e.,* 240–480 μ diameter, and the ostiolum 12–280 μ in length and 7–8 μ across, but the asci and ascospores are nearly the same as described from other plants, *i. e.,* asci 80–120 × 8.5–16 μ and ascospores 27.1–104 × 3.2–4 μ.

The author suggests four important factors in preventing the disease: (1) Selection of a resistant variety; (2) necessity of avoiding the use of too much nitrogen fertilizers; (3) not allowing too much water on the field; and finally (4) application of stable manure instead of mulching the field.

MARSONIA CARTHAMI T. Fukui sp. nov. in Nôgaku Kwaihô (Journ. of the Scientific Agricultural Society) No. 166, pp. 381–383, fig. 6. T. 5, vi. June, 1916. (Japanese.)

Spots ochre-brown, few, 1–10 rarely more, orbicular, elliptical or irregular, never angular, varying in size, the largest 10 × 6 mm., sometimes confluent, forming still larger spots, margin definite, raised, punctate with acervuli; acervuli subepidermal, scattered, brownish; conidiophores hyaline or pale yellowish, 20 × 3 μ; conidia hyaline or pale yellowish-brown, elliptic, ends acute especially the base, giving a fusiform appearance, contents granular at maturity, 1-septate, constricted at the septum, 10–25 × 4–6 μ, average 20 × 5 μ.

On living leaves of young plants of *Carthamus tinctorius* L. (Compositae) called in Japan *Benibana* (*Hung-hua,* in Chinese) found at the experiment farm of Shidzuoka-ken Agr. Experiment Station, Abegun, Shidzuoka-ken, Japan: Sept. (?), 1916.

MYCOSPHAERELLA HORDICOLA Hara sp. nov., ex Tsuruda, Shôitsu in Byôchû-gai Zasshi (Journ. of Plant Protection) 3^7: 532. July, 1916. (Japanese.)

Perithecia small, black, globular, 297 × 212 μ or 255 × 212 μ (figures doubtful); asci irregularly cylindrical or sometimes conical, octosporous; spores hyaline, fusiform, blunt at both ends, 7–15 × 2.7–3.5 μ, two-celled, contents granular. On the blades and culms of wheat, barley, and naked barley,

Differs from *Sphaerella bacicola* B. Frank which grows on rye and has perithecia with rosy interior and constricted elliptical spores which measure 10–12 μ. This sp. is also distinct from *Mycosphaerella Hordei* Karst which has straight, elliptical or fusiform constricted spores, 18–24 × 6–8 μ.

Distribution: Shidzuoka-ken, Suntô-gun, Kanaoka-mura, May 24, 1916, S. Tsuruda; Agehara-mura, May 3, 1916, S. Tsuruda; Ukishima-mura, May 11, 1913, S. Tsuruda; Fuji-gun, Obuchi-mura, June 22, 1915, Takimura Nôkwai (Agr. Soc. of Taki-

mura); Inasa-gun, Iinoya-mura, April 13, 1914, S. Tsuruda; Aratama-mura, May, 1914, T. Okada.

New Japanese name of the disease: Mugi no Kangare-byô (Culm-rot disease of barley and wheat).

Local name of the disease: Mugi no Tachigare (Foot-rot or stem-rot of barley and wheat); Kuse (Bad-habit).

Notes: A barley variety "Dobu" seems resistant to the disease; on the other hand the variety "Oku-mikawa" is very susceptible. The disease is much less injurious when seeds are sown earlier than the usual planting time. The disease becomes virulent when nitrogenous fertilizers are used too freely. Phosphate is effective in strengthening the growth of the culm to withstand the disease. Lime, sulphur-flower, and Bordeaux mixture all lessen the damage done by this fungus.

SCORIAS CAPITATA K. Sawada sp. nov. in Nôjishikenjô Tokubetsu Hôkoku (Special Report, Agr. Exp. Station) Taiwan (Formosa), No. 11, pp. 123–124, pl. 4, fig. 19–23. T. 4, ii, Feb., 1915. (Japanese.)

Mycelia covering the upper surface of the leaves of *Thea sinensis* as a black mass, sometimes covering the lower surface and even the twigs, presenting a conspicuously rough or fuzzy appearance, which is caused by bundles of hyphae and slender perithecia which stand upright. Hyphae catenulate, soot color, 2.5–5 μ across; hyphae bundles (perithecial stalks) soot color, once or twice branched, of various forms but usually conical, cylindrical, fusiform or elliptical, frequently two joined together at the lower half, 110–247 $\times$ 52–75 μ, apically constricted terminated by perithecia; perithecia black, nearly ovate or orbicular, 60–83 $\times$ 50–78 μ, containing numerous asci; asci clavate, obtuse, hyaline, 30–35 $\times$ 9–12 μ, with 6–8 spores; spores fusiform to clavate-fusiform, obtuse at both ends, hyaline, 3-septate, 10–11.5 $\times$ 3–3.5 μ.

Type locality: Taihokuchô Chônaiho-shô, Formosa. Dec. 12, 1907, Y. Fujikuro.

ZUKALIA THEAE K. Sawada sp. nov. in Nôjishikenjô Tokubetsu Hôkoku (Special Report Agr. Exp. Station) Taiwan (Formosa) No. 11, p. 122, pl. 4, figs. 10–13. T. 4, ii, Feb., 1915. (Japanese.)

Perithecia black, globose, 67–135 μ in diameter; subiculum black,

hyphae filiform, at first pale, later brownish, branched, septate, 3–6 μ across; asci many, surrounded by 6–8 dark brown, blunt, 5–6-septate setae, 70–100 × 4 μ; asci 8-spored, hyaline, clavate, fusiform, 68–90 × 13–16 μ; spores hyaline, obovate elliptic to clavate, 3-septate, 17–23 × 6–7 μ.

On leaves and twigs of *Thea sinensis*.

Type locality: Shinchiku-chô, Sanshaka, Formosa, May 10, 1910, K. Sawada.

PESTALOZZIA THEAE K. Sawada sp. nov. in Nôjishikenjô Tokubetsu Hôkoku (Special Report Agr. Exp. Sta.), Taiwan (Formosa), No. 11, p. 113, pl. 4, figs. 7–9. T. 4, ii, Feb., 1915. (Japanese.)

Spots punctate with acervuli; acervuli at first subepidermal, later erumpent, finally exposed; mycelium penetrating the host, hyaline, branching, 2.5–3 μ in diam., mycelial tissue thin but composed of tightly woven hyphae; conidiophores caespitose, simple, short, filiform, 4–9 × 1 μ, fugacious; conidia fusiform, 4-septate, slightly constricted, 3 inner cells dark brown, 16–21 μ, basal and apical cells hyaline, 4–6 μ, setae 3–4, 28–36 × 1–2 μ, slightly swollen at the apex, hyaline.

On leaves of *Thea sinensis*. Diseased spots brown when young, when mature gray with brown margin, usually 1 cm. in diam., sometimes covering half of a leaf. Acervuli always appear on the concentric zone as black dots, but when they occur on the under surface of leaves, the zones are not always distinct and the dots are very few.

Type localities: Taihokuchô Zuihô, Jul. 4, 1909, Y. Fujikuro; Taihokuchô Kusshaku, Jul. 14, 1908, Y. Fujikuro; Taihokuchô Mokusaku, Sept. 30, 1908, Y. Fujikuro: Taihokuchô Shinten, Jul. 15, 1908, Y. Fujikuro; Taihokuchô, Rigyokutsu, Jul. 13, 1908, Y. Fujikuro; Taihokuchô, Hokuseiko, Jul. 9, 1907, R. Suzuki; Taihokuchô Chônaiho, Dec. 19, 1908, K. Sawada; Nov. 30, 1909, Y. Fujikuro, May 4, 1910, K. Sawada; Tôenchô Kessishô, Aug. 21, 1908, K. Sawada & Y. Fujikuro; Tôenchô Dôraken, Aug. 21, 1908, K. Sawada & Y. Fujikuro; Tôenchô Anheichin, Aug. 20, 1908, K. Sawada & Y. Fujikuro; Shinchikuchô Shinpo, May 6, 1910, Y. Fujikuro; Akôchô Kôkô, Jul. 8, 1910, K. Sawada.

SCLEROTINIA FAGOPYRI S. Hori sp. nov. in Byôchû-gai Zasshi (Journ. Plant Protection) 3^8: 171–175. Mar. 1916. (Japanese.)

Sclerotia orbicular, ellipsoid, oblong or ovoid, 2–3 × 2–4 mm., surface black, inner tissue rose colored; apothecia one or two from a sclerotium, cinnamon-brown, 3 mm. in diam., somewhat cupulate, stipitate, stipes 3–5 mm. in length; asci cylindrical, slightly curved, 135–155 × 9–11 μ; ascospores eight, obliquely monostichous, 11–14 × 6–8 μ, guttulate near each end; paraphyses filiform or clavate, slightly longer than the asci, 2–2.5 μ in diam., 2–4 (usually 2–3) septate.

The sclerotia form inside of the seeds of *Fagopyrum esculentum* and probably germinate twice a year. The diseased seeds sink in brine of 1.12 to 1.20 sp. gr., while healthy seeds float. They alone should be planted.

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